What is claimed is:

1. A method of determining the probability that a percentage of a plurality of parts will fail after a given time using a sample of part failures and the Weibull distribution type, the method comprising the steps of

choosing an initial percentage and a value for a random variable for use as a limit in the Weibull distribution type, the Weibull distribution type having a scale parameter and a shape parameter;

defining a first plurality of logarithmic ranges, wherein the scale parameter has a substantially equal probability of occurring;

defining a second plurality of logarithmic ranges, wherein the shape parameter has a substantially equal probability of occurring;

determining a two-dimensional array of probabilities of obtaining the sample of part failures, wherein one dimension of the array includes the first plurality of logarithmic ranges, and a second dimension of the array includes the second plurality of logarithmic ranges;

selecting a level of significance of the values of the probabilities and discontinuing the two-dimensional array when the values do not meet that level of significance;

using the Weibull distribution type to create an associated second array of percentages based on the chosen random variable, an associated shape parameter, and an associated scale parameter, wherein the associated shape parameter and the associated scale parameter relate to the particular location on the array of probabilities;

dividing the array of probabilities based on whether the associated second array of percentages are above or below the chosen initial percentage;

determining a first sum of all of the values of the array of probabilities;

determining a second sum of all of the values of one of the parts of the probabilities;

comparing the first sum and the second sum to determine the probability that a percentage of a plurality of parts will fail after the given time, and

taking one of a plurality of actions including creating a graphical representation of the comparison, using the comparison to predict costs associated with

failure occurrences over a period of time, and using the comparison to determine whether to re-engineer the part.

2. The method of claim 1, wherein the distribution model is a Weibull distribution defined by the cumulative distribution function: $F(x)=1-e^{-\left(\frac{x}{\theta}\right)^{m}}$.

3. The method of claim 2, further comprising the step of changing the value of one of the cumulative distribution function and the random variable such that the determined odds substantially equal a desired value.

4. A method of determining a cumulative distribution function confidence bound comprising the steps of

providing a plurality of test data;

selecting a distribution model having a first parameter and a second parameter, wherein the distribution model is defined by a cumulative distribution function that is a function of a random variable;

assigning numeric values to the cumulative distribution function and the random variable such that the first parameter is a function of the second parameter;

determining a likelihood function from the test data and the distribution model;

integrating the likelihood function up to a selected limit in order to calculate a numerator, the selected limit being defined by the relationship between the first parameter and the second parameter;

integrating the entire likelihood function in order to calculate a denominator; and

calculating the confidence bound by dividing the numerator by the denominator.

5. The method of claim 4, wherein the distribution model is one selected from the group comprising a Weibull distribution, a Gamma distribution, a Beta distribution, a Gaussian distribution, and a F distribution.

6. The method of claim 4, wherein the distribution model is a Weibull distribution defined by the cumulative distribution function: $F(x) = 1 - e^{-\left(\frac{x}{\theta}\right)^m}$.

7. The method of claim 4, wherein the first parameter is a scale parameter.

8. The method of claim 4, wherein the second parameter is a shape parameter.

9. The method of claim 4, wherein an incremental volume under the likelihood function is defined by the product of the likelihood function, a change in the logarithm of the first parameter, and a change in the logarithm of the second parameter.

10. The method of claim 4, wherein an incremental volume under a quotient of the likelihood function and one of the first parameter and the second parameter is defined by the product of the quotient, a change in the first parameter, and a change in the logarithm of the second parameter.

11. The method of claim 4, wherein an incremental volume under a quotient of the likelihood function and the product of the first parameter and the second parameter is defined by the product of the quotient, a change in the first parameter, and a change in the second parameter.

12. The method of claim 4, further comprising the step of changing the value of one of the cumulative distribution function and the random variable such that the calculated confidence bound substantially equals a desired value.

13. The method of claim 4, further comprising the step of taking one of a plurality of actions including creating a graphical representation of the calculated confidence bound, and using the confidence bound to predict risks associated with occurrences over a period of time.